

TVA's fertilizer plant at Muscle Shoals, Ala., with Wilson Dam in the background. Built during and following World War I, the plant has been modernized for producing ammonium nitrate and phosphate fertilizers

TVA and the Fertilizer Industry

TVA's distributor-demonstration program called unfair competition by fertilizer makers. Furor revolves around ammonium nitrate

A STAFF REPORT

THE FERTILIZER INDUSTRY, highly critical of some of TVA's fertilizer activities, is becoming more outspoken, although its criticism is already widespread. Main target of the plant food makers' guns is TVA's distributor-demonstration program. This program, say industry spokesmen, puts the Federal Government into direct and unfair competition with industry in the fertilizer market.

Every company polled by AG AND FOOD criticized, to some extent, TVA's fertilizer distribution program. On one extreme is one company president who would like to see TVA get out of fertilizer altogether—research and development work, too. All of the others feel that the research and development part of the arrangement is fine, but that's where TVA should stop.

Right now, the biggest controversy revolves around ammonium nitrate. According to its 1956 annual report, TVA distributed over 139,000 tons of ammonium nitrate in 1955-56. While this much ammonium nitrate is only

a small part of all the nitrogen fertilizer used, it does represent a large share—about 17%—of total ammonium nitrate production, says industry. According to Joe E. Culpepper of Spencer Chemical, the nitrate produced by TVA is sold at considerably less than the market price on an almost unrestricted basis. And echoing this sentiment is International Minerals' Maurice H. Lockwood. He says that large scale production by TVA is an unwise and costly effort to push fertilizer evolution. "As sound citizens," he thinks, "we should see that TVA gets out of the production and distribution of ammonium nitrate."

In addition, fertilizer makers claim that TVA ammonium nitrate is of a poorer quality than commercial material. Most of industry's production is granular product, while TVA's is not. And an industry leader thinks that the reason the TVA fertilizer is discounted is because it would not sell at competitive prices.

Harry A. Curtis, who recently stepped down as a TVA director, says

that there have been complaints from industry people about the TVA fertilizer program ever since its beginning in 1935. From time to time, he says, small segments of the industry have protested rather vigorously.

As an example, Curtis cites diammonium phosphate. A few years ago, he says, when TVA set out to introduce DAP, the price at which industry could profitably sell the material was carefully estimated. TVA then fixed its price to distributors in the educational program with only the usual discount. Curtis says that there were some loud complaints over the estimated cost and the price. But within a couple of years, one company that had started production was selling the material at less than TVA had estimated. Curtis goes on to say the current small over-capacity for ammonium nitrate production leads some fertilizer concerns to lay their troubles at TVA's door step.

The DAP question is a ticklish one; some potential producers doubt that any profit or allowance for deprecia-

tion is possible if the product is to be sold at or below the price set by TVA. With acid costs running about \$80 and conversion costs about \$20 per ton of product, they feel the material is not very attractive to industry. On the other hand, says one industry spokesman, if TVA were to put its price at a more realistic—say 10% higher—level, commercial DAP production could be quintupled in six months. Industry could then realize a profit instead of a loss, and coke oven operators could convert their ammonia into DAP instead of the market-glutting ammonium sulfate.

Distributor-Demonstration Program

Here is a summary of TVA's distributor-demonstration program, with a sampling of industry opinion holding that it doesn't work, and explaining why.

TVA lists four parts to the program:

- To introduce to farmers new and improved fertilizers in limited quantities. This part currently applies mainly to TVA calcium metaphosphate and DAP in some areas, and to ammonium nitrate in a large portion of the country.

- To promote the adoption of improved fertilization practices by farmers. This phase of the program includes ammonium nitrate, concentrated superphosphate, calcium metaphosphate, and DAP for direct application.

- To lower the cost of plant nutrients to farmers.

- To improve products, processes, and distribution systems through special projects.

The program is conducted in 35 states by 73 wholesale distributors. Distributors select those parts of the program in which they wish to participate. The TVA price to distributors averages about 90% of industry's market price. Its intention, says Curtis, is to allow only enough discount to cover the distributor's extra costs and to offer a small inducement to farmers to use the fertilizers in ways that can improve farm economy.

But this is where the program flops, says industry. Once the fertilizer leaves TVA, it charges, there are no controls over its use. Distribution is not controlled for use on specific crops, nor is it policed; no penalties are levied for misuse. Distributors are able to sell the material at lower prices because of the discount. The farmer can use it as he sees fit. When this happens, fertilizer can be used without supervision or evaluation of results by either TVA or the land grant colleges.

In 1955-56, 97% of TVA's produc-

tion of ammonium nitrate moved through these commercial distribution channels. But TVA claims to have formal contracts with each of its distributors, covering use of fertilizer. Distributors agree to require their dealers to observe restrictions on use. In many instances, TVA says, contractual agreements are carried all the way to the farmer, who signs an agreement as to how he will use the material.

TVA admits that the program has proved to be a difficult one to keep strictly on an educational track. Complaints that come in here and there are checked. Sometimes, says TVA, the complaints are not justified; when they are, remedial measures are taken. TVA estimates that about 10%, sometimes a bit more, of its fertilizer is used in ways never intended.

Curtis says that right now TVA has a committee made up of people from colleges and from industry checking the program. Early results of this field survey covering distributors, dealers, and farmers, including distributors not handling TVA products, show that the program is evidently working nearly as intended, he claims.

But fertilizer makers don't think much of the survey. Nowhere in the questionnaire is there a provision to ascertain *why* TVA distributes plant food—only *how*, they say. Thus, the survey may result in some changes in methods of distribution, but no cut-back.

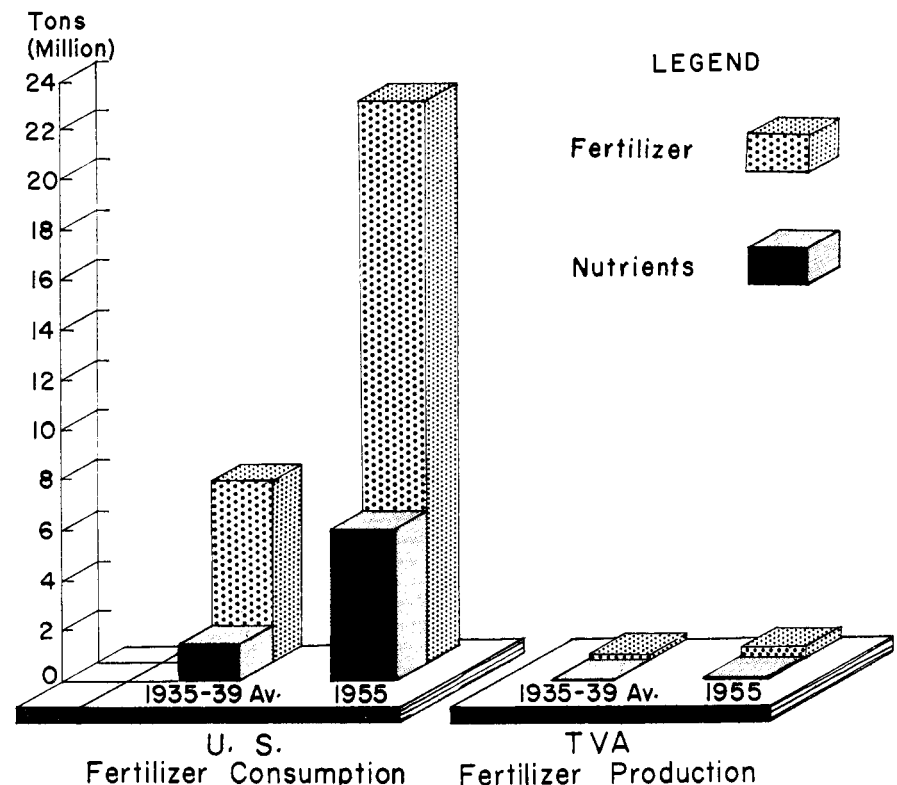
"Of course the questionnaire was

directed toward the how and not the why," counters Curtis. The why, he notes, is a matter for TVA board decision.

Even the fact that the survey committee includes three representatives from industry is a source of disagreement. Curtis feels their presence on the committee assures the industry that its views are being considered. But a manufacturer points out that the industry representatives are in every case members of firms who distribute for TVA, giving the committee a built-in pro-TVA slant. One industry man holds that TVA can use this survey to justify being in the fertilizer business in the first place, even though this is not its ostensible purpose.

The crux of the argument about TVA's fertilizer programs lies not in "what," or even "how," but actually in "how much." Almost no manufacturer has raised a voice against the technological research or development activities of TVA, and few oppose a limited program of distribution for demonstration purposes. But many feel that TVA exceeds its proper limits in such programs.

Sorest of the sore points is the ammonium nitrate program. Many industry people are convinced that TVA calculates how much ammonium nitrate it must produce in order to utilize its total nitrogen facilities to its best advantage, and then adopts a distribution program to suit. These industry people feel that the proper—and more logical—approach would be





Harry A. Curtis, whose term as a TVA director recently expired, is a vigorous defender of TVA's fertilizer production and research. With the new appointee, A. R. Jones, as one of TVA's triumvirate of directors, TVA observers feel there may be a shift in TVA's operating philosophy. Senate has not yet confirmed Jones's appointment

to determine how much nitrate is required for a planned demonstration program, and then trim production to suit.

The distribution-demonstration program is part of TVA's over-all educational program for the farmer. TVA feels that it has played an important role in bringing about the beneficial changes in production and use of fertilizer over the past 20 years. For example, TVA launched a program to get concentrated superphosphate into wider use. The concentrated material was cheaper than ordinary superphosphate, but farmers generally were not familiar with the higher grade material and were unaware of its economic value. In 1935, TVA distributed about 24,000 of the total 91,000 tons used in the country. But in 1955, TVA distributed 55,000 tons while the United States total had jumped to 1,570,000 tons. Also, TVA claims to have pioneered the use of ammonium nitrate, as well as DAP. And, notes Curtis, it has introduced calcium metaphosphate, which carries some 62% plant nutrient as against 20% in ordinary superphosphate. The first commercial plant for production of this material is now being built.

Generally, industry agrees that TVA efforts have significantly helped to promote fertilizer growth. But this concession is qualified. One fertilizer maker calls TVA's claims about its educational program achievements "grossly exaggerated." An East Coast manufacturer says that results of TVA

educational efforts do not justify the large amount of money that has been devoted to these efforts. And, says Spencer Chemical's Culpepper, the program does not justify the tonnages now being produced.

Another fly in the ointment insofar as some manufacturers are concerned is that most of the distribution takes place through cooperatives. Coops, industry feels, enjoy tax advantages that enable them to undersell other industrial outlets. Not only that, says Culpepper, but the same distributing organizations are used each year, so that in effect TVA is trying to teach the same farmers over and over again. This makes as much sense as teaching the same child to walk once each year, he says.

Remedies Offered

A large number of industry people say that the best cure for the ailment is amputation—cutting off TVA's fertilizer distribution-demonstration program. But many others suggest changes that could be made in the program.

Culpepper suggests this approach with ammonium nitrate. The only basis on which farm demonstrations with ammonium nitrate might be held would be that of showing the economic values accruing to farmers from proper fertilization. TVA, he thinks, should continue to make small quantities of such fertilizer—whatever, if any, might be necessary in the opinion of the Department of Defense to keep its plants in stand-by condition. If the

defense department finds that TVA's plants must continue to produce small quantities, all the material should be used only in a true crop demonstration program, to be conducted through the agricultural extension services, or state vocational agricultural projects.

Another industry proposal is that TVA carry out all phases of agricultural research, with emphasis on long-range problems of a pure research nature rather than on applied research. Process research, through pilot plant scale, should stress new products. And it should halt when the big problems are solved, when economics prove unsound, or when two or more commercial plants take on the work. The distribution end, the suggestion continues, should be aimed at farmer education but should be so handled as to create no competition with industry. It could work this way:

- Set a time limit for acceptance of the fertilizer; if it isn't accepted by the deadline, drop it.
- Restrict distribution to 1, 2, or 3% of national consumption within about 8 or 10 years after the fertilizer is introduced.
- Distribute through regular fertilizer sales channels, except for the amount that goes to colleges or other agencies for test-demonstrations on a share-the-cost plan. In the test-demonstrations, emphasis ought to be placed on working through youth organizations.

In connection with this proposal, TVA claims that it has set time limits,

The TVA fertilizer pilot plant. Each year, TVA shows many fertilizer industry visitors through its facilities, making its research findings available to all



as in the case of fused tricalcium phosphate. And in recent years, Curtis points out, production of concentrated superphosphate and ammonium nitrate has been reduced. In fact, the plant producing the latter operated at about half capacity for a while last year. TVA doesn't plan to make either DAP or calcium metaphosphate indefinitely. And it wants to get out of concentrated superphosphate and ammonium nitrate as soon as it can without wrecking the educational program.

Still another industry man believes that most of the friction would be eliminated if TVA would adopt what he calls proper labeling for its products. He thinks that packages should carry a statement that deliveries are being made at a special low price for educational purposes only, that research and development costs are not fully considered in pricing TVA's products, and that unlike private industry TVA is not obligated to pay corporation taxes, or a return on investment.

But TVA sticks to its guns. Curtis feels that it is highly important that TVA carry its development of a process beyond pilot plant stage. Aside from the educational programs directed toward fertilizer use, TVA feels that it has been of great service to industry along technical lines. Curtis notes that scarcely a week goes by but that from one to a dozen representatives of fertilizer companies go to the TVA chemical plant at Wilson Dam for information. All of TVA's technical reports are made available to them. They inspect equipment and borrow blueprints. All TVA patents are available to industry on a non-exclusive, royalty-free basis. Curtis says, "We have been quite willing to receive these visitors, even from companies who would like to sack TVA; for while TVA does not regard service to industry as one of the principal aims of its research and development program, it does believe that a strong, alert, and progressive fertilizer industry is good for agriculture."

Is industry ready to assume all of the educational programs now being pursued by TVA if the latter should leave the picture? Industry's answer is yes—with some qualification. A number of large fertilizer makers are now carrying on educational programs—and usually doing it well, says TVA. Industry feels that with its own efforts added to those of USDA and the state agricultural colleges, effective education could be achieved.

Curtis says that most of the existing programs are cooperative programs with TVA. The large firms would undoubtedly continue their educa-

tional programs were TVA out of the picture. But it's the small distributor and hundreds of dealers who, he feels, must somehow be kept in the program if its benefits are to reach all growers. Without TVA, several manufacturers agree, the lion's share of the educational burden would have to be carried by the large fertilizer raw materials suppliers. Some of them feel that

still too many operators and dealers would continue to ignore grower education if it were no longer done for them.

No one expects to see TVA pull out of its current operations. No organized movement by industry to force the issue is in the wind. But sentiment is there, calling for some kind of re-evaluation of TVA's efforts.

TVA's Annual Production of Selected Fertilizer Materials

Year ended June 30	Concentrated superphosphate	Calcium metaphosphate	Dicalcium phosphate	Fused tricalcium phosphate	Ammonium nitrate
	Tons available P ₂ O ₅	Tons available P ₂ O ₅	Tons total P ₂ O ₅	Tons total P ₂ O ₅	Tons N
1935	8,100	..	..	..	..
1936	11,007	..	..	..	..
1937	14,985	..	..	..	..
1938	21,746	2,787	..	..	..
1939	31,777	2,804	..	..	..
1940	36,553	2,234	..	..	..
1941	45,880	6,936	..	..	..
1942	26,460	7,341	..	..	..
1943	27,092	4,255	..	..	4,769
1944	22,070	1,840	4,148	..	43,772
1945	10,431	2,602	2,987	..	37,325
1946	32,022	5,003	11,502	4,558	51,244
1947	60,163	4,924	10,037	7,676	51,697
1948	70,950	3,908	11,057	6,731	51,875
1949	74,402	2,041	16,995	4,547	50,665
1950	60,375	10,264	22,934	4,777	45,873
1951	69,730	19,657	147	5,110	45,517
1952	62,870	20,739	..	4,306	66,309
1953	63,986	26,097	..	5,062	66,052
1954	49,293	34,907	..	7,249	63,357

Fertilizer Materials Used in TVA's Test Demonstration Program

Year ended June 30	Concentrated superphosphate	Calcium metaphosphate	Fused tricalcium phosphate	Ammonium nitrate	Potash-phosphate ash	Total
	Tons	Tons	Tons	Tons	Tons	Tons
1935	1,986	..	..	..	..	1,986
1936	29,352	..	..	..	..	29,352
1937	21,625	..	..	..	..	21,625
1938	13,598	255	..	..	..	13,853
1939	14,891	3,462	3	..	..	19,583
1940	19,886	7,293	1	..	..	27,617
1941	18,353	8,949	570	..	..	28,052
1942	19,616	11,007	488	..	..	31,420
1943	22,522	7,159	265	5,908	..	37,090
1944	30,926	971	552	9,453	110	47,868
1945	22,754	5,953	258	8,233	986	40,461
1946	24,692	7,049	10,307	4,275	1,119	48,376
1947	19,480	9,232	28,149	..	23	56,861
1948	4,002	5,076	25,033	..	269	34,490
1949	4,127	4,712	18,092	..	..	26,931
1950	4,137	9,273	17,528	..	..	30,938
1951	3,752	7,114	18,411	..	..	32,676
1952	412	5,787	9,374	52	..	18,728
1953	404	5,017	13,621	1,408	..	23,504
1954	147	3,715	10,868	3,283	..	18,013